



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,266	10/23/2003	Arthur R. Piehl	200312416-1	1571

22879 7590 05/25/2005

HEWLETT PACKARD COMPANY  
P O BOX 272400, 3404 E. HARMONY ROAD  
INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER

MAHONEY, CHRISTOPHER E

ART UNIT PAPER NUMBER

2851

DATE MAILED: 05/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

**Office Action Summary**

Application No.

10/692,266

Applicant(s)

PIEHL, ARTHUR R.

Examiner

Christopher E. Mahoney

Art Unit

2851

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9, 13-24, 26, 28, 29 and 35-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 13-24, 26, 28, 29 and 35-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

Claims 11 and 28 are objected to because of the following informalities:

There is a lack of antecedent basis for “the at least one other range” as recited in claim 11.

Claim 28 requires the word “light” either before or after the word “projected”

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5-7, 13, 15-17, 19-22, 26, 29, 35-36, and 38-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Do (U.S. Patent No. 5,957,560). Do teaches a projection screen 24 comprising a substrate having thereon one or more fluorescent materials (col. 3, lines 41 and 51, col. 5, lines 30-45) that emit visible light in red (col. 5, lines 31-35), green (col. 5, lines 36-40), and blue (col. 5, lines 41-45) wavelengths, upon receiving incident thereon, light in the UV spectrum (col. 5, line 49) where an image is displayed on the screen (col. 5, lines 53-56) and means for projecting the excitation light (projector, col. 2, line 15). One or more absorption

Art Unit: 2851

materials (metal or color plastic) may be used to absorb wavelengths of light that are not included in the one or more ranges and not included in the other range (col. 5, lines 62-67).

Claims 1-3, 5-9, 11, 13, 15-17, 19-22, 26, 29, 35-36, and 38-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Friesem (U.S. Patent No. 3,881,800). Friesem teaches a projection screen 20 comprising a substrate 10 having thereon one or more fluorescent materials 12 (col. 1, lines 50-54, col. 2, lines 3-4) that emit visible light in red, green, and blue wavelengths (figure 2, col. 2, lines 3-5), upon receiving incident thereon, light in the UV spectrum (col. 1, line 57). One or more absorption materials (col. 2, line 1) absorb wavelengths of light that are not included in the one or more ranges and not included in the other range. Primer dots 11 are disposed between the fluorescent material and the substrate to reflect light in the one or more ranges (col. 2, lines 15-19).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4, 14, 18, 23-24, 28, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Do (U.S. Patent No. 5,957,560) in view of Spector (U.S. Patent No. 4,323,301) or in view of Freese (U.S. Patent No. 6,816,306). Do teaches the salient features of the claimed invention including the projection light being directional (figures 1, 2, and 8 for example). Do does not explicitly recite a Lambertian distribution for the screen. Both Spector

Art Unit: 2851

(col. 1, line 18) and Freese (col. 8, line 21) teach that it was known to produce a screen with Lambertian distribution. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the features taught by Spector or Freese for the purpose of providing uniform brightness or uniform viewing throughout any angle.

Claim 4, 14, 18, 23-24, 28, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friesem (U.S. Patent No. 3,881,800) in view of Spector (U.S. Patent No. 4,323,301) or in view of Freese (U.S. Patent No. 6,816,306). Friesem teaches the salient features of the claimed invention except for a Lambertian distribution. Both Spector (col. 1, line 18) and Freese (col. 8, line 21) teach that it was known to produce a screen with Lambertian distribution. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the features taught by Spector or Freese for the purpose of providing uniform brightness or uniform viewing throughout any angle.

### *Response to Arguments*

Applicant's arguments filed March 21, 2005 have been fully considered but they are not persuasive.

The applicant argues that Do does not anticipate claim 1 because it does not teach a substrate, having thereon, one or more fluorescent materials that emit visible light with an incidence of one or more ranges of wavelengths of light and absorb visible light in at least one other range of wavelengths that is not included in the one or more ranges. The examiner respectfully disagrees. Do clearly teaches one or more fluorescent materials (col. 3, lines 41 and 51, col. 5, lines 30-45) that emit visible light (col. 5, lines 31-45), with an incidence of one or

Art Unit: 2851

more ranges of wavelengths of light thereon. So it appears the applicant is arguing that the fluorescent materials do not absorb visible light in at least one other range of wavelengths that is not included in the one or more ranges. The applicant is suggesting that the fluorescent materials reflect all other light incident upon them. If this were the case, the fluorescent materials would not appear to be either red or green or blue. Rather they would appear white. The elements listed in col. 5 of Do are all multi-atom fluorescent materials. As already stated there will be some wavelengths of light,  $\lambda_{N1}$ , which are absorbed and cause fluorescence. The absorption of these wavelengths cause transitions of electrons from a lower energy states to higher energy states. When the electrons drop back to the lower energy states, the fluorescent light is emitted. There will be other wavelengths of light,  $\lambda_{N2}$ , which will cause different transitions which do not result in fluorescence or the emission of any visible light.

Regarding claims 11 and 26 the applicant argues that Do does not teach a (fluorescent) material that emits visible light upon the incidence of UV light (excitation light) and a material which absorbs light not included in the range(s) of the excitation light and not included in some other undefined range. The examiner respectfully disagrees. Do clearly teaches one or more fluorescent materials (col. 3. lines 41 and 51, col. 5, lines 30-45) that emit visible light (col. 5, lines 31-45), with an incidence of one or more ranges of wavelengths of light thereon and that the incident excitation light may be UV (col. 5, line 49). Do also teaches the material which absorbs light (metal or plastic). The applicant recognizes on page 8 of the remarks that the absorption material absorbs wavelengths of visible and non visible light. If the excitation light is UV and the absorption material absorbs visible light, then the absorption material does absorb light in a range of wavelengths different than the range of excitation wavelengths. Claim 11

Art Unit: 2851

does not recite that the absorption material does not absorb light in the excitation range. Since the other claimed range is undefined it can be any range, even a single wavelength, and can also be in the UV spectrum. Since the absorption material absorbs visible light, then the absorption material does absorb light in a range of wavelengths different than the undefined range of wavelength(s). Even if the undefined range were in the visible, green for example, since the absorption material absorbs red and blue, it would absorb light in a range of wavelengths different than the undefined range of wavelength(s).

The applicant argues that Do does not anticipate claim 16 because it does not teach a screen that emits visible light with an incidence of one or more ranges of wavelengths of light and absorb visible light in at least one other range of wavelengths that is not included in the one or more ranges. The applicant is directed to review the responses with respect to claims 1 and 11 *supra*.

Regarding claim 35 the applicant argues that Do does not teach forming one or more fluorescent materials on a substrate that emit visible light and forming over the substrate one or more absorption materials that absorb visible light in at least one other range of wavelengths. The examiner respectfully disagrees. Do teaches forming fluorescent materials (col. 5, lines 32-45) over a substrate 24. The fluorescent material emits visible light (red for example) upon receiving excitation light in one or more ranges of light (UV for example). The absorbing material absorbs visible light (which is not in the UV and therefore) not in the one or more ranges. Furthermore, it could also be argued that one of the other fluorescent materials (green for example) could be interpreted as the absorption material formed on the substrate since it would absorb some visible light not in the one or more ranges.

Art Unit: 2851

Regarding claim 40 the only element newly argued is the projector which is disclosed in col. 2, line 16, and figure 1. Projectors are also discussed in col. 1 in general. The additionally recited elements are disclosed as discussed earlier in this Office Action.

Regarding claim 23 the applicant recites the whole claim minus the light source and argues that Do does not teach those elements. The applicant indicates that amended claim 23 contains the subject matter of claim 25 which was rejected as being unpatentable over in view of Spector or in view of Freese. The applicant simply states that Do does not teach all the elements of the claimed invention but does not address the combination of Do in view of Spector or Do in view of Freese. Do teaches the image forming device (projector) that forms an image from UV (col. 5, line 49) such that with incidence on the screen that includes fluorescent materials (col. 3, lines 41 and 51, col. 5, lines 30-45) the projection screen emits visible light (in red, green and blue) viewable by the human eye (red, green and blue are visible by the human eye). The image formed by the projector is directional. Both Spector and Freese teach the Lambertian distribution in a screen.

The applicant argues that Friesem does not anticipate claim 1 because it does not teach a substrate, having thereon, one or more fluorescent materials that emit visible light with an incidence of one or more ranges of wavelengths of light and absorb visible light in at least one other range of wavelengths that is not included in the one or more ranges. The examiner respectfully disagrees. Friesem clearly teaches one or more fluorescent materials (col. 1, lines 50-54, col. 2, lines 3-4) that emit visible light (figure 2, col. 2, lines 3-5), with an incidence of one or more ranges of wavelengths of light thereon. So it appears the applicant is arguing that the fluorescent materials do not absorb visible light in at least one other range of wavelengths that is



Art Unit: 2851

not included in the one or more ranges. The applicant is suggesting that the fluorescent materials reflect all other light incident upon them. If this were the case, the fluorescent materials would not appear to be either red or green or blue. Rather they would appear white. As already stated with regard to Do above, there will be some wavelengths of light,  $\lambda_{N1}$ , which are absorbed and cause fluorescence. The absorption of these wavelengths cause transitions of electrons from a lower energy states to higher energy states. When the electrons drop back to the lower energy states, the fluorescent light is emitted. There will be other wavelengths of light,  $\lambda_{N2}$ , which will cause different transitions which do not result in fluorescence or the emission of any visible light.

Regarding claims 11 and 26 the applicant argues that Friesem does not teach a (fluorescent) material that emits visible light upon the incidence of UV light (excitation light) and a material which absorbs light not included in the range(s) of the excitation light and not included in some other undefined range. The examiner respectfully disagrees. Friesem clearly teaches one or more fluorescent materials (col. 1, lines 50-54, col. 2, lines 3-4) that emit visible light (figure 2, col. 2, lines 3-5), with an incidence of one or more ranges of wavelengths of light thereon, with an incidence of one or more ranges of wavelengths of light thereon and that the incident excitation light may be UV (col. 1, line 57). Friesem also teaches the material which absorbs light (col. 2, line 1). If the excitation light is UV and the absorption material absorbs visible light, then the absorption material does absorb light in a range of wavelengths different than the range of excitation wavelengths. Claim 11 does not recite that the absorption material does not absorb light in the excitation range. Since the other claimed range is undefined it can be any range, even a single wavelength, and can also be in the UV spectrum. Since the absorption material absorbs visible light, then the absorption material does absorb light in a range of

Art Unit: 2851

wavelengths different than the undefined range of wavelength(s). Even if the undefined range were in the visible, green for example, since the absorption material absorbs red and blue, it would absorb light in a range of wavelengths different than the undefined range of wavelength(s).

Regarding claim 35 the applicant argues that Friesem does not teach forming one or more fluorescent materials on a substrate that emit visible light and forming over the substrate one or more absorption materials that absorb visible light in at least one other range of wavelengths. The examiner respectfully disagrees. Friesem teaches forming fluorescent materials (col. 1, lines 50-54, col. 2, lines 3-4) over a substrate 20. The fluorescent material emits visible light (red for example) upon receiving excitation light in one or more ranges of light (UV for example). The absorbing material absorbs visible light (which is not in the UV and therefore) not in the one or more ranges. Furthermore, it could also be argued that one of the other fluorescent materials (green for example) could be interpreted as the absorption material formed on the substrate since it would absorb some visible light not in the one or more ranges.

Regarding claim 40 the only element newly argued is the projector which is disclosed in col. 3, lines 22 (laser), 28 (projection system) and 31 (projection lens). The additionally recited elements are disclosed as discussed earlier in this Office Action.

Regarding claim 23 the applicant recites the whole claim minus the light source and argues that Friesem does not teach those elements. The applicant indicates that amended claim 23 contains the subject matter of claim 25 which was rejected as being unpatentable over in view of Spector or in view of Freese. The applicant simply states that Friesem does not teach all the

Art Unit: 2851

elements of the claimed invention but does not address the combination of Friesem in view of Spector or Do in view of Freese.

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher E. Mahoney whose telephone number is (571) 272-2122. The examiner can normally be reached on 8:30AM-5PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be

Art Unit: 2851

obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



CHRISTOPHER MAHONEY  
PRIMARY EXAMINER